**J. Sargeant Reynolds Community College**
**Course Content Summary**

**Course Prefix and Number:** AUT 245 **Credits:** 4

**Course Title:** Automotive Electronics

**Course Description:** Introduces the field of electronics as it applies to the modern automobile. Emphasizes basic circuit operation diagnosis and repair of digital indicator and wiring systems. Prerequisites: AUT 241 and 242. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**General Course Purpose**: To examine the basic theory, operation, diagnosis, and repair of automotive electronic systems. Safety will be emphasized.

**Course Prerequisites and Co-requisites:**
**Prerequisites**: AUT 241 and AUT 242

**Course Objectives:**
Upon completing the course, the student will be able to
a. Describe how semiconductors, diodes, and transistors work;
b. Explain the principles of operation for common electronic circuits;
c. Explain the principle of multiplexing;
d. Describe the basic function of the central processing unit (CPU);
e. List and describe the functions of the various sensors used by computers;
f. Describe the principle of analog and digital signals;
g. Explain the principle of computer communications;
h. Summarize the function of a binary code;
i. Name the various memory systems used in automotive microprocessors;
j. List and describe the operation of output actuators;
k. Identify the proper procedure to safeguard electronic systems;
l. Describe the basic electronic logic circuits; and
m. Explain how to use an oscilloscope for diagnosing electronic systems.

**Major Topics to Be Included:**
a. Semiconductors
b. Diodes and transistors
c. Semiconductor circuits
d. Sensors (feedback, Vref, NTC, PTC, etc.)
e. Communication signals
f. Logic gates (FET, NOT, NAND and NOR gates)
g. Multiplexer and DE multiplexer
h. Memories (ROM, PROM, EPROM, EEPROM, RAM, KAM, NVRAM)
i. Actuators (output drivers, LCD, VFD)
j. Power supplies
k. Testing electronic circuits and systems (Ford, GM, Daimler Chrysler, and imports) (RMS, Frequency, Hertz)

**Effective Date of Course Content Summary**: April 1, 2009